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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Gi-Teak Park

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OSTROLENK FABER GERB & SOFFEN
1180 AVENUE OF THE AMERICAS
NEW YORK, NY 100368403

EXAMINER

MENON, KRISHNAN S

ART UNIT

PAPER NUMBER

1797

MAIL DATE

DELIVERY MODE

06/26/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/598,782	Applicant(s) PARK ET AL.	
	Examiner Krishnan S. Menon	Art Unit 1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 May 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14, 16-25 and 27-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-14, 16-25 and 27-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claims 1-14, 16-25 and 27-30 are pending as amended 5/6/09.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 16, 20: there is no corresponding structure disclosed for the *protrusion between the blades*: the protrusion is believed to be on the blade, not between the first and second blades. Claim 20: "of circle shape substantially" is considered as - - of substantially circular shape - -.

It is also suggested that applicant correct the claims for language and grammar.

Claim interpretations:

Claim 1: the rotor as claimed can be interpreted as having a single shaft on to which two or more sets of radially extending blades are arranged, spaced apart in the axial direction, and between two sets of blades is a filter tray.

Claims 6 and 7: the first and second sets of blades are in two different planes separated along the axis, and the first set of blades are also off-set or overlapping with the second set in the circumferential direction.

Claim Rejections - 35 USC § 102

1. Claims 1, 4-7, and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Hug (US 4,312,756)

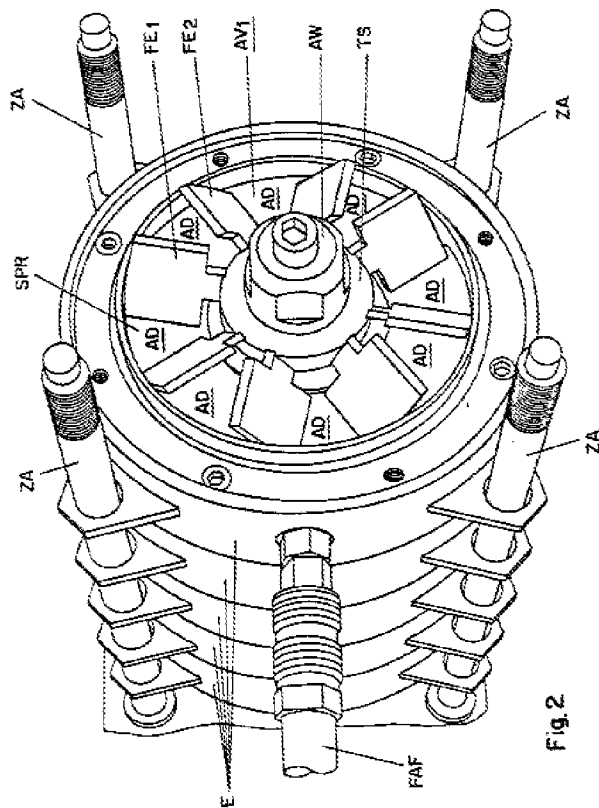


Fig. 2

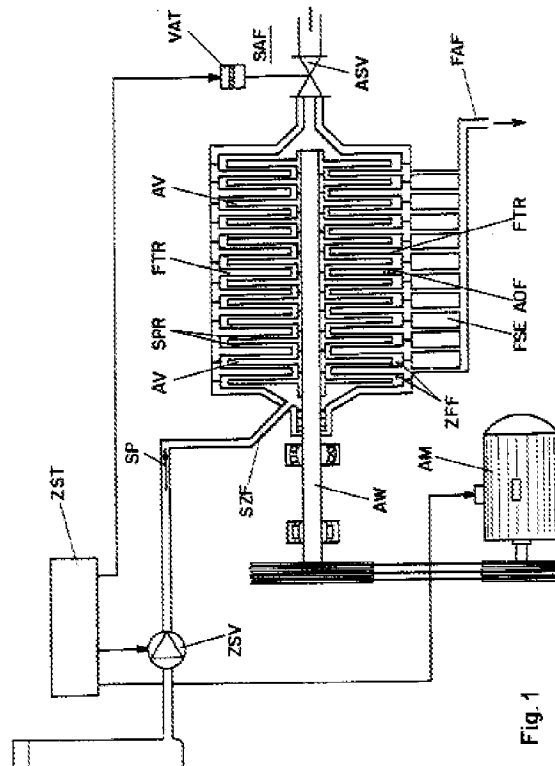


Fig. 1

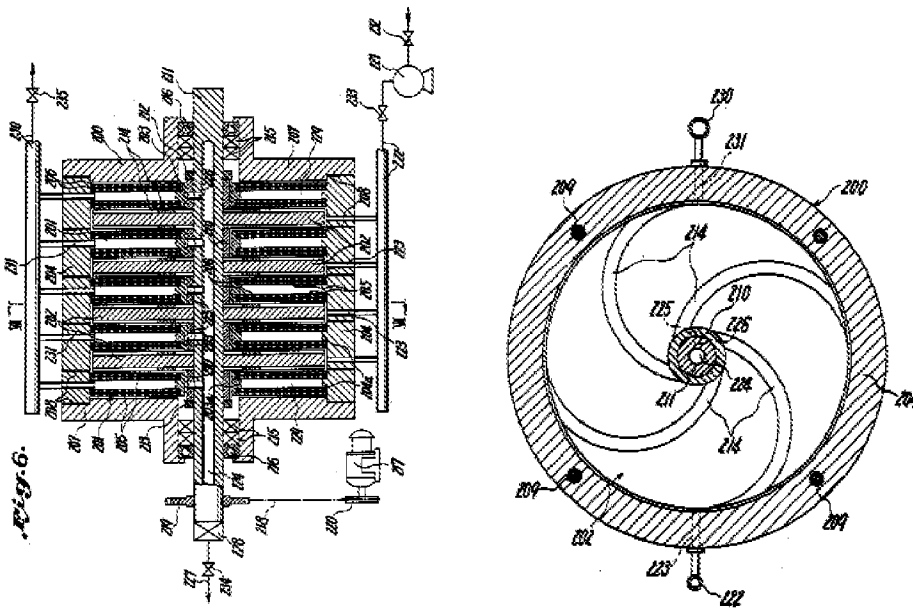
Hug teaches plural sets of blades attached on shaft AW, with a filter tray located between each two sets of blades – see the figures copied above.

There is no requirement that the blades of each set of blades must be oriented in any specific direction/location with respect to its adjacent sets of blades. Thus the blades can be relatively overlapping and/or offset. Claim 1 requires only one filter tray and one rotor. One could have several of this arrangement of rotor and filter trays in a barrel as contemplated by the broadest reasonable interpretation of claim 1.

Claim Rejections - 35 USC § 103

2. Claims 1-14, 16-25 and 27-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki (US 4,066,546) and/or Henttonen et al (US 6,027,656), and/or Huebel (US 5,925,247), and/or Rolchigo et al (US 5,993,674).

Sasaki teaches filter discs alternately interspersed with rotor discs as claimed – see figures 6 and 7 copied below. The rotor discs have vanes, ribs or ridges (214) on it.



The rotor discs differ from the “blades” as recited in applicant’s claims in the light of the disclosure in the specification. However, “vanes” is only an obvious variation of the disc design, and is also known in the art as shown by Henttonen.

Henttonen teaches filters interspersed with rotary blades having plurality of blades – see figures. Figure 4 has blades 15 having ridges 20 on them. This reference also teaches irregularities on the rotors thus:

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"According to one embodiment of the rotor it is designed in such a way that the essentially plane surfaces of the wings directed towards the filter are provided with irregularities deviating from the plane of the wing surface. The irregularities may, for example, be through-holes, recesses or slots, or bosses."

These references also differ from the specific claim limitation of "different positions" for the alternating blades. However, having the blades of Henttonen or the vanes of Sasaki being oriented in different positions would not be a patentable limitation because the blades or vanes could have differing positions as they are assembled as a random variable, and the teaching of the references do not specify that they have to be in the same position.

Rolchigo teaches rotor discs having ridges (figure 8). Rolchigo also teaches providing holes in the rotor disc to prevent movement of the disc and filters towards each other (abstract) due to the pumping action of the rotor disc.

Hubel teaches membrane carrier discs with perpendicular protrusions (18, 180) on the surface (figures), and carrier cushions (C3, L 34-54). One of ordinary skill in the art would provide such protrusions on the carrier disc or the rotor disc/vane to provide turbulence and swirl for the flowing medium as taught by Hubel (lines 50-54, column 3).

Such limitations are also known in the art, and therefore, unpatentable.

The filter tray is fixed; has the separation membrane affixed to a disc having drain paths and drain cloth, or filter support in other references. Hubel has a cushion for the filter above the carrier disc.

It would be obvious to one of ordinary skill in the art to combine the teachings of two or more of the cited references to arrive at applicant's claimed invention because it

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provides nothing more than predictable results - See KSR Int'l. v. Teleflex Inc., 127 S. Ct. 1727, 1732, 82 USPQ2d 1385, 1390 (2007). "it is commonsense that familiar items have obvious uses beyond their primary purposes, and a person of ordinary skill often will be able to fit the teachings of multiple patents together like pieces of a puzzle". "The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results".

3. Claims 1-14, 16-25 and 27-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hug as described in claim 1 above and further in view of a combination of Sasaki (US 4,066,546), Henttonen et al (US 6,027,656), Huebel (US 5,925,247), and/or Rolchigo et al (US 5,993,674).

The additional limitations of the claims are taught by the combination of one or more of the cited secondary references as shown in rejection 2 above.

Response to Arguments

Applicant's arguments filed 5/6/09 have been fully considered but they are not persuasive.

Applicant's intended definition of the rotor as recited in the claims appears to be a hub having two sets of blades axially separated (with several such rotors on a shaft). However, that interpretation is not distinct in the claims as written, and in the broadest sense, the claims would read as interpreted in the rejection.

Even if the claims were interpreted as applicant intended, then also the two sets of blades as depicted in applicant's figures (for example, fig 11) in such a way that a blade of the first set (211) is fused to a corresponding blade (221) in the adjacent set, thus making the blades 211 and 221 as if single blade, bent somewhat like a "Z" in cross-section. (Blades 211 and 221 are not separated from each-other) This structure is equivalent to several different structures presented in figures 3-10 of Hug.

Allowable Subject Matter

Claim 19 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims, to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

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mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Krishnan S. Menon whose telephone number is 571-272-1143. The examiner can normally be reached on 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vickie Kim can be reached on 571-272-0579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Krishnan S Menon/
Primary Examiner, Art Unit 1797